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GUIDELINES FOR THE PREPARATION OF HAZARDOUS MATERIAL SPILL CONTINGENCY PLANS

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Prepared by:

D.C. Tilden
and
H.E. Westermann

Environmental Protection
Conservation and Protection
Environment Canada
Western and Northern Region
Northwest Territories District Office
Yellowknife, N.T.

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1.0 INTRODUCTION AND SCOPE

There is an increasingly large number of chemicals, oils and other hazardous substances spilled as a result of highway, rail, and waterway accidents; storage tank leaks; pipeline breaks; or other "unscheduled events". On occasion, these events reach major (disaster) proportions. While major spills are rare, spills in general are not. In many areas, there are daily occurrences in which tanks, drums, bags, bottles, pails, boxes, streams, piles and clouds of hazardous materials are dispersed in a manner that no one ever intended. These spills can be further complicated by such factors as terrain, population, location, weather, and human elements.

Any person, organization or company that has control or custody of significant volumes of hazardous materials has a legal and moral responsibility to prevent pollution of the environment. Responsible parties must institute spill prevention measures and provide the capability to respond to spills to minimize environmental damage. The appropriate level of contingency measures will depend upon the spill risk and the preventative measures already taken. Owner/operators will be required by government regulation to have the capability to deal with spills of fuel or other hazardous materials that could potentially result from their operations or activities. Having this capability requires the development of a comprehensive spill contingency plan. Clearly, it is in everyone's best interest to effectively plan for the management of spill events prior to their occurrence.

This document provides basic guidelines for the development of hazardous material spill contingency plans. It identifies factors that should be considered in the development of contingency plans and the information that should be incorporated into a comprehensive contingency plan.

The guidelines are intended to apply to all operations, activities and/or facilities in the Northwest Territories that involve the production, use, storage, transportation, treatment and/or disposal of hazardous materials. The term "hazardous materials" as used in these guidelines refers to substances, that if released in an uncontrolled manner (i.e. spilled), can be harmful to people, animals, property and/or the environment.

2.0 PURPOSE OF CONTINGENCY PLANNING

The primary purpose of contingency planning is to minimize the socio-economic and environmental impacts of spills by establishing pre-determined lines of response and plans of action. A contingency plan should designate lines of authority and responsibility, establish proper reporting and communication procedures, and organize plans of action and countermeasures to be used in the event of a spill.

2.1 Legal Requirements

Contingency planning may also be required to meet legal requirements of Federal or Territorial legislation. The following government agencies have spill contingency related legislation:

2.1.1 The Canada Oil and Gas Lands Administration (COGLA) requires that oil exploration companies submit contingency plans in accordance with guidelines issued pursuant to the Canada Oil and Gas Drilling Regulations of the Oil and Gas Production and Conservation Act.

2.1.2 The Northwest Territories (NWT) Department of Transport requires transporters of certain dangerous goods to file an emergency response plan in accordance with the NWT Transportation of Dangerous Goods Act Regulations.

2.1.3 The Northwest Territories Water Board requires most industrial operators to submit spill contingency plans as a condition of their water licences.

2.1.4 Indian and Northern Affairs Canada (INAC) may require winter road operators to submit contingency plans as a condition of land use permits, issued pursuant to the Territorial Lands Act. INAC may also request contingency plans as a condition of a lease issued pursuant to the Public Lands Grants Act. These leases apply to artificial islands constructed by offshore oil and gas operators.

2.1.5 Environment Canada (EC) may request contingency plans from Federal facility operators or Crown corporations, in accordance with the general provisions of the Fisheries Act. EC may also require contingency plans for any substance on the Toxic Substances List pursuant to the Canadian Environmental Protection Act.

2.1.6 The NWT Department of Renewable Resources may require individual operators to produce contingency plans pursuant to the NWT Environmental Protection Act.

The absence of a specific legislative requirement to produce a formal spill contingency plan for a particular industry, operation or substance, does not preclude the necessity to develop a plan. Most pollution control legislation requires that due diligence be exercised in the prevention and containment of a spill. A well prepared and maintained spill contingency plan is a major factor in demonstrating that due diligence has been exercised.

Individuals or companies desiring additional information regarding their legal obligations for contingency planning should contact the appropriate aforementioned government agencies.

3.0 IMPORTANT STAGES IN CONTINGENCY PLAN DEVELOPMENT

The development of any contingency plan can be divided into a number of stages. Eight of the most important stages have been listed and described below. These stages appear in the order in which it is recommended that they be undertaken in the development of contingency plans. A flow diagram of the contingency plan development process is shown in Figure 1.

3.1 Spill Risk Assessment

The first important step in the process of preparing a contingency plan is to conduct a comprehensive spill risk appraisal or hazard analysis of the operation or facility in question. This assessment includes a number of factors, which are listed below.

CONTINGENCY PLAN DEVELOPMENT PROCESS

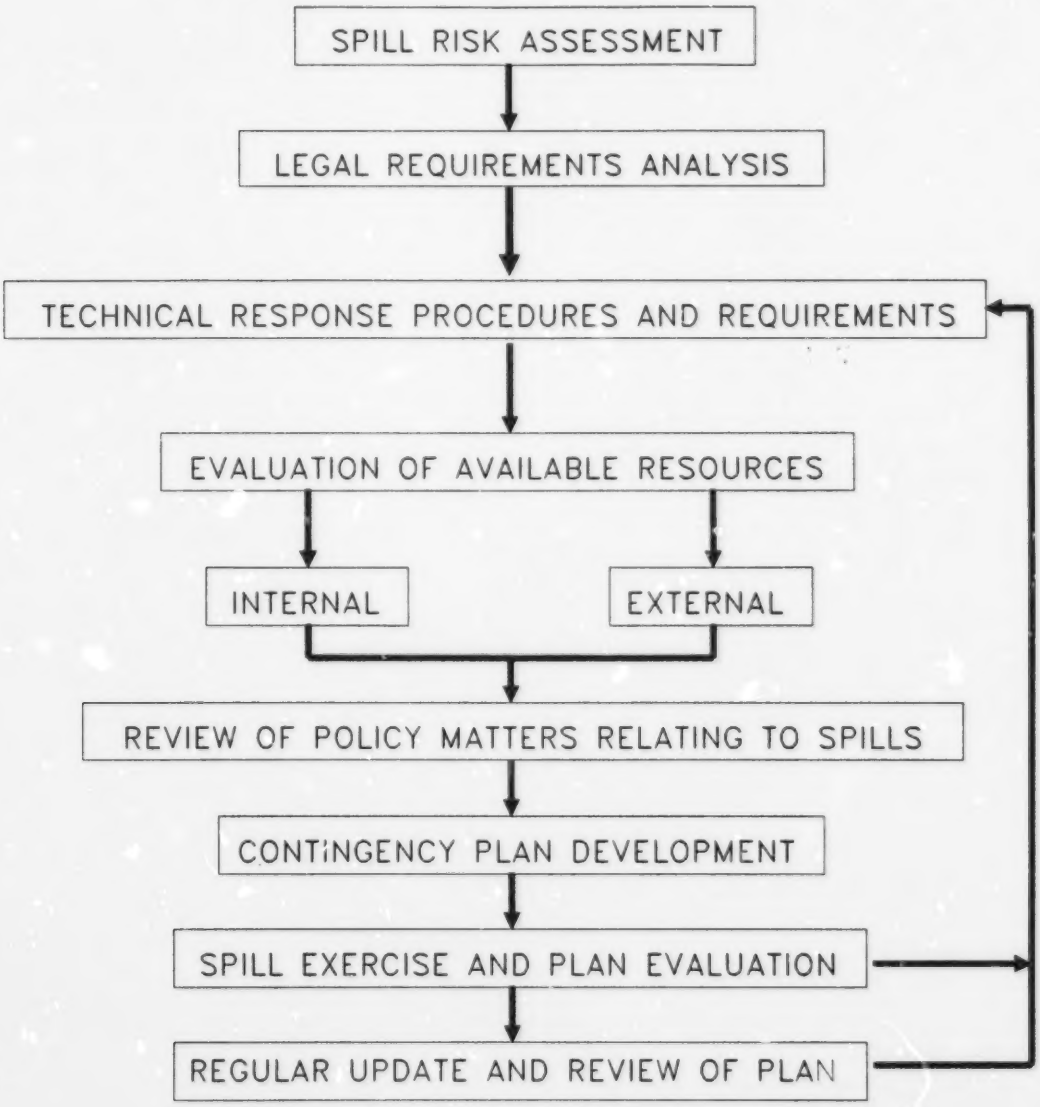

FIGURE 1

3.1.1 Identify potential sources of spills and establish the possible location and circumstances under which a spill could occur.

3.1.2 Estimate the potential size and type (hazardous material) of spill.

3.1.3 Establish where the spill would migrate to if it occurred. Identify any environmentally and socially sensitive areas in the migration path such as:

- waterfowl habitats
- fish spawning, rearing, feeding or over-wintering areas
- animal migration routes
- water intakes or supplies for industrial, domestic and recreational uses
- commercial, domestic and sport fishing sites
- existing and proposed parks, bird sanctuaries and other ecological reserves
- hunting and fishing areas and camps
- archaeological and historic sites
- habitat of any rare, endangered or threatened species
- settlements
- beaches and similar recreational areas.

3.1.4 Identify preventative measures that could be implemented including preventative maintenance, design changes, colour coding and signs, control of third party damage, proper abandonment of equipment, and satisfactory operating procedures.

3.1.5 Identify conditions that could limit or complicate response capability, for example:

- inaccessibility, remoteness and large distances between centres of activity and supply
- cold temperatures, poor visibility, presence of ice and snow, adverse wind and wave conditions
- difficult terrain conditions.

3.1.6 Identify specific safety hazards that could develop as the result of a spill.

Once the above information has been assembled, evaluated and assessed, the contingency planner should have a good idea of what spill hazards exist and where the risks of spills lie.

3.2 Legal Requirements Pertaining To Contingency Planning

After assessing the risk of spills occurring and the potentially affected areas, legal requirements pertaining to contingency planning should be determined. These requirements may include sampling, maintaining of records, reporting of spills to the appropriate authorities, and notifying the public of potential hazards.

3.3 Technical Response Procedures and Requirements

Identify the best practical technology for containment, clean-up, storage, disposal and site restoration for the types of spills anticipated. This should include identifying communications and health and safety procedures and equipment.

3.4 Evaluation of Available Resources

An evaluation of all existing emergency response resources, both internal and external to the organization, should be made to determine how they can be utilized and integrated into the contingency plan. These resources could include expert advice, spill response equipment, trained emergency response personnel, existing contingency plans, etc. Examples of external resources include industry cooperatives for mutual assistance; private contractors; and all levels of government. The existing contingency plans of various government agencies

are listed in Appendix I.

3.5 Policy Matters Relating to Spill Response

In conjunction with the development of a contingency plan, the owner/operator must establish internal policies that will enable company staff to respond quickly and effectively to spills. The following policy issues should be reviewed with respect to spills:

- employee safety when responding to a spill
- liability insurance for damage claims
- financial authority of spill response staff
- response to media and public enquiries
- training of response personnel
- recording and reporting requirements with regard to a spill
- access to sufficient funds
- standing offer agreements with contractors and suppliers
- management procedures and information systems

3.6 Contingency Plan Development

A Spill Contingency Plan document should be prepared which outlines all aspects of the spill response for each anticipated situation. The recommended structure and content of a contingency plan are described in section 4.

3.7 Spill Exercises and Plan Evaluation

Spill exercises should be conducted to provide training and experience to the response team and to evaluate the effectiveness of the various aspects of the plan.

3.8 Regular Update and Review of Plan

The plan should be updated on a regular basis to include changes, additions or corrections such as staff, phone and facsimile numbers, new legal requirements, etc.

These updates should then be promptly distributed to all holders of the plan. In the event that a spill does occur, an evaluation of the response should be conducted. Feedback information gleaned from actual clean-up operations as well as test exercises should be used to improve the contingency plan. Thus the plan will be continually refined and improved and the owner/operator will be better prepared to meet legal obligations and responsibilities for maximizing environmental protection.

4.0 CONTENTS OF A HAZARDOUS MATERIAL SPILL CONTINGENCY PLAN

The following is a list of the main elements or sections of a comprehensive spill contingency plan. Subject headings are listed in the general order that is recommended for their inclusion in contingency plans.

1. Record of Changes or Amendments
2. Index or Table of Contents
3. Introduction
4. Response Organization and Responsibilities
5. Initial Action - All Spills
6. Spill Reporting and Alerting (Telephone Roster)
7. Response Strategies/Procedures (Action Plans)
8. Response Equipment/Resource Inventory
9. Supporting Documentation and/or Appendices

There are no hard and fast rules of how a contingency plan must be organized. Every organization, operation and/or facility is structured differently, and the organization of contingency plans will vary accordingly. A number of recommended references are listed in Appendix II. The contents of a plan, however, should cover the range of information and be of similar scope to the descriptions which follow.

4.1 Record of Changes or Amendments

Maintaining an up-to-date version of a plan is of prime

importance. When corrections, additions or changes are made, they should be recorded in a simple bookkeeping style so that all plan users will be aware they are using a current plan. All contingency plans should have the date of issue indicated upon the cover page. If the entire plan is to be re-issued on a periodic basis, the Record of Changes/ Amendments section may be omitted.

4.2 Index or Table of Contents

The Table of Contents section is self-explanatory. Page references should be used to make sure key sections can be found quickly during emergencies. Maps, charts, figures, supporting documentation and appendices should be clearly identified.

4.3 Introduction

The content of the introductory section is more informational than functional. Elements of the Introduction should include:

- purpose/objective of the plan
- scope of the plan (geographic or physical boundaries)
- description of physical site and/or operations
- assumptions/planning factors
- abbreviations and definitions (e.g. classes of spills)
- policies relating to plan implementation (e.g. effective date of plan, environmental protection, regulatory compliance, public relations, safety, etc).
- plan distribution and contact for additional or revised copies of the plan.

4.4 Response Organization and Responsibilities

This section should include an organization chart of the spill response team and provide a listing of the duties of all key personnel responsible for responding to spills (e.g. on-scene commander, environmental/safety advisor, field operations supervisor). This section should clearly establish:

- who will be in charge
- what will be the chain of command
- when will the on-scene authority pass to another level and to whom it will pass

- who will have advisory roles
- who will have the technical say-so on response actions
- how do the principals keep each other informed
- which government/regulatory agencies will be informed and by whom
- who is to make public statements.

4.5 Initial Action - All Spills

This section should briefly outline the initial actions to be taken by the first person(s) arriving at the scene of a hazardous material incident. Initial actions are often critical in determining the outcome of a spill incident. Initial actions for all spills should include statements to the effect that the first person on the scene will:

- report the spill to management and/or the spill response team and ensure that the government is notified at the same time via the NWT 24-Hour Spill Report Line: (403) 920-8130
- take steps to protect the lives of anyone in the spill area
- isolate or remove any possible ignition sources, if possible
- locate the likely source of the spill
- try to shut off the source of the spill, if it can be done without risk
- record all relevant information for reporting purposes
- attempt to contain the spread of the spill if possible, using available equipment/materials.

4.6 Spill Reporting and Alerting (Emergency Telephone Roster)

This section of the plan should describe and outline the communications system put in place by the owner/operator to ensure an expedient response to a spill. Both internal and external lines of communication for conveying preliminary emergency spill information should be identified. Home and work telephone numbers of all key response personnel and their alternates should be included. Reference should be made to

the requirement to report all spills to the NWT 24-Hour Spill Report Line: (403) 920-8130, and a copy of the GNWT Spill Report Form should be included in the plan. The type of information to be recorded and reported includes:

- report date, date and time of spill, if known
- location and map co-ordinates of spill and direction, if moving
- party responsible for spill
- product spilled and estimated quantities (provide metric weights/volumes)
- cause of spill
- whether spill is terminated or continuing
- extent of contaminated area
- factors affecting spill or recovery - e.g. temperature, wind, snow, ice, buildings, terrain
- containment - naturally, booms, dikes or other, or no containment
- action, if any, taken or proposed to contain, recover, clean-up or dispose
- whether assistance is required and if so, what form
- hazard to persons, property or environment - fire, drinking water, threat to fish or wildlife
- additional comments and/or recommendations
- reported by (position, employer, location, telephone)
- reported to (position, employer, location, telephone).

4.7 Response Strategies/Procedures (Spill Action Plans)

The response strategy (or spill action plan) section is probably the most critically important section of any contingency plan. Response strategies should provide a detailed outline of "what to do" and "how to do it" in terms of responding to probable spill scenarios. Probable spill scenarios should be evident from the spill risk appraisal and hazard analysis already conducted. Examples of spill scenarios might include:

- land spills - summer, confined to land
- land spills - summer, escapes into lake
- land spills - summer, escapes into river
- water spill - summer, into river
- tank truck over-turn - winter road
- offshore spills - during break-up, into water and onto ice
- tailings spill - during freeze-up, into creek or onto land.

For each type of spill, there should be a description of the response personnel, equipment, resources and sequence of actions that will most likely be required to effectively contain, recover, store and dispose of the spilled material, and the restoration measures that would be undertaken for the affected area. Details regarding safety concerns and spill surveillance and monitoring should also be included. Factors that will limit the effectiveness of spill response measures or capabilities should also be included.

4.8 Response Equipment/Resource Inventory

This section should provide a comprehensive inventory of all oil spill response equipment and resources available to the owner/operator to respond to possible spills. These resources should be described in two categories:

1. resources available on-site
2. resources available from other sources.

The strategic locations of all resources should be identified. Telephone contacts to access these resources and an estimated time frame for delivery should be provided. Special arrangements to obtain external resources should be described. Resource items should include:

- clean-up/disposal contractors and services provided
- clean-up material and equipment
- communications equipment
- emergency transportation (aircraft, boats, 4-wheel drive vehicles, etc.)

- clean-up personnel

- personal protective equipment.

4.9 Supporting Documentation/Appendices

This final section will include all relevant background information and documentation in support of the principle contents of the plan. Background information and appendices might include:

- environmental data, environmental sensitivity maps

- information on the fate, effects and behaviour of hazardous materials

- response training and exercises

- government regulations

- contact lists for various external contacts (e.g. academic or government expertise, consultants, and other specialist services).

5.0 CONCLUDING REMARKS

A contingency plan, by itself, does not ensure that an owner/operator will effectively respond to spills. An effective response relies on trained personnel using techniques and equipment that are suitable for the job. Planning is only one step in the process; it defines what should be done, but it does not ensure that it will be done. When a plan is completed, it will only become effective and functional if there exists a lead organization, a group, a section, or an individual whose job it is to apply the plan and see to it that:

1. a spill response policy exists
2. information and reporting systems are in place
3. response procedures are established
4. personnel are available
5. personnel are trained
6. everyone knows their role
7. equipment is available
8. equipment is maintained
9. co-ordination/mutual aid truly exists
10. new developments/equipment are added
11. new hazards are identified
12. telephone numbers, etc., are kept up to date
13. exercises are conducted
14. useful response actually takes place.

It should be remembered that: "failing to plan is planning to fail".

APPENDIX I

EXISTING GOVERNMENT SPILL CONTINGENCY PLANS

Canadian Council of Ministers of the Environment, Canadian Memorandum Of Understanding For Environmental Emergencies (Draft).

Environment Canada, Atmospheric Environment Service (AES), Response To Peacetime Emergencies In The NWT.

Environment Canada, Atmospheric Environment Service (AES), Central Region Environmental Response Plan.

Environment Canada, Atmospheric Environment Service (AES), Quebec Region Environmental Emergency Response Plan.

Environment Canada, Atmospheric Environment Service (AES), Western Region Environmental Emergency Response Plan.

Environment Canada, Environmental Protection, Operational Plan For The Arctic Regional Environmental Emergency Team (AREET).

Environment Canada, Department Of The Environment Policy On Peacetime Emergency Response.

Emergency Preparedness Canada, Federal Crisis Management Procedures - Northwest Territories.

Department of Fisheries and Oceans, Institute of Ocean Sciences, DFO Arctic Marine Emergency Plan.

Department of Fisheries and Oceans, Freshwater Institute, DFO Scientific Response Plan For Spills In The Beaufort Sea.

Department of Fisheries and Oceans, Winnipeg, Central And Arctic Region Internal Procedures For Response To Environmental Emergencies.

Indian and Northern Affairs Canada, Northern Affairs Program, INAC-NAP Arctic Waters Emergency Response Plan.

Indian and Northern Affairs Canada, Northern Affairs Program, NAP NWT Region Hazardous Materials Spill Plan.

Canadian Oil and Gas Lands Administration (COGLA), COGLA Northern Region Emergency Response Plan.

Transport Canada, Canadian Coast Guard, Vancouver (TC/CCG-Western), Coast Guard Western Region Marine Contingency Plan.

Transport Canada, Canadian Coast Guard, Ottawa (TC/CCG-HQ) Arctic Marine Emergency Plan.

Transport Canada, Canadian Coast Guard, Ottawa (TC/CCG-HQ) Canada-United States Joint Marine Contingency Plan.

Transport Canada, Canadian Coast Guard, Ottawa (TC/CCG-HQ) Marine Environment Co-operative Agreement With Denmark Regarding Combatting Pollution Between Greenland And Canada.

Transport Canada, Canadian Marine Transport Administration and Petroleum Association For Conservation Of The Canadian Environment, Joint Oil Spill Response Plan.

APPENDIX II

RECOMMENDED REFERENCES

A Guide To Assist In The Preparation Of An Emergency Response Association Plan, Compliance and Operations Branch, Transport of Dangerous Goods Directorate, Transport Canada, 1988.

Contingency Planning Guidelines, A Spill Training Module, Petroleum Association for the Conservation of the Canadian Environment, 1975.

Contingency Plan Criteria For Releases Of Dangerous Goods And Hazardous Wastes, The Nova Scotia Department of the Environment, May 30, 1989, Draft.

Emergency Response Plans, Transportation of Dangerous Goods Regulations, Transport Canada, 1987.

Guidelines For Contingency Planning, Northwest Territories Water Board, January, 1987.

Guidelines For The Preparation Of An Individual Company Oil And Salt Water Spill Contingency Plan, Canadian Petroleum Association.

Guidelines For The Preparation Of Emergency Response Plans For Drilling, Completion and Testing Of Sour Wells, Canadian Petroleum Association, April, 1987.

Guidelines For Preparation Of Sour Gas Emergency Response Plans For Sour Gas And Oil Facilities, Canadian Petroleum Association, April, 1987.

Guidelines For Preparing Spill Contingency Plans For Winter Road Operations In The Northwest Territories, E. Paquin et al., October, 1983.

Planning For Spill Contingencies, A Supplement To The Province Of Ontario Contingency Plan For Spills Of Oil And Other Hazardous Materials, Ontario Ministry of the Environment, 1989.

Guidelines For The Preparation Of An Emergency Response Contingency Plan, Saskatchewan Environment and Public Safety, January, 1989.

Suggested Procedure For Development Of Spill Prevention Control And Countermeasure Plans, American Petroleum Institute, February, 1976.

Planning Guide and Checklist for Hazardous Materials Contingency Plans, Federal Emergency Management Agency, July 1981.

Contingency Planning: A Global Perspective, Cutter Information Corp., 1990.

Response to Marine Oil Spills, International Tank Owners Pollution Federation Ltd., 1987.